

The AMD Athlon™ 64 and AMD Athlon 64 X2 Dual-Core Processors, for Today's High-Performance Embedded Solutions

A performance and power balance for embedded systems

The performance demands on embedded systems are increasing, and the AMD Athlon™ 64 and AMD Athlon 64 X2 Dual-Core processors provide unique features and high performance for high-end and more traditional embedded designs.

Based on the award-winning AMD64 technology with Direct Connect Architecture, the AMD Athlon 64 family of processors provides a balanced foundation for storage, telecommunications, point of sale, networking, military, imaging, and gaming systems, as well as other traditional embedded markets like single-board computing and industrial control.

AMD64 technology delivers a balanced approach to raw processing power, memory performance, I/O throughput, and scalability. Add the vision of 32- and 64-bit application support with native multi-core computing in a consistent thermal envelope and many embedded designers are finding their next-generation systems deliver record-breaking application performance.

What can a balanced architecture deliver?

AMD Athlon 64 and AMD Athlon 64 X2 Dual-Core processors with Direct Connect Architecture can improve overall system performance and efficiency by eliminating traditional bottlenecks inherent in legacy architectures, where front-side buses restrict and interrupt the flow of data. With AMD64 processors, there are no front-side buses. Instead, the processors, memory controller, and I/O are directly connected to the CPU and communicate at CPU speed. Further, the integrated memory controller dramatically reduces memory latency while HyperTransport™ technology delivers the industry's highest possible I/O bandwidth. Data speeds through the system without encountering the front-side bus bottleneck that plagues competing x86 platforms.

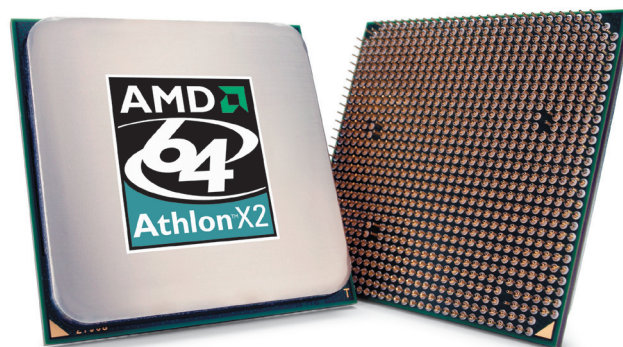
And all this performance comes in a low-power processor. AMD64 technology offers low operational costs with reduced power draw and heat dissipation and features like AMD Cool'n'Quiet™ technology with Optimized Power Management, which can deliver performance on demand and minimize power consumption.

"There was a reason we wanted AMD64 technology. It gives our storage systems a balanced architecture overall, high I/O throughput, low latency memory capabilities, dual core and all with low power requirements."

Allan Tackett

*Director, Advanced Computing Center for Research & Education
Vanderbilt University*

*(Speaking on the success of his PowerStore™ Data Storage systems
from Capricorn Technologies.)*



The innovation of AMD64, the ease of x86, the choice for embedded systems

In addition to performance, AMD Athlon 64 and AMD Athlon 64 X2 Dual-Core processors for the embedded market are NEBS-friendly and offer Error Correcting Code (ECC) to help deliver reliability and secure data transactions for embedded systems. Innovations like AMD Virtualization™ can help customers maximize server efficiency while AMD's Torrenza initiative is designed to make it easy to incorporate application-specific FPGAs or co-processors directly onto the AMD64 platform.

AMD is committed to providing our embedded customers with choice and designing on the industry-standard x86 platform provides access to thousands of software, hardware, and development tools. AMD processors are compatible with the major Microsoft® Windows® operating systems as well as Linux.® Our goal is allowing you maximum opportunity to design the embedded system you envision and your customers demand.

AMD Athlon™ 64 and AMD Athlon 64 X2 Dual-Core Processor Technology Key Architectural Features

Key architectural features

The AMD Athlon™ 64 and AMD Athlon 64 X2 Dual-Core processor core

- 35 watts
- Leading-edge performance for 32- and 64-bit applications
- 40-bit physical addresses, 48-bit virtual addresses
- Sixteen 64-bit integer registers
- Sixteen 128-bit SSE/SSE2/SSE3 registers
- AMD Digital Media Xpress™ provides support for SSE, SSE2, SSE3, and MMX instructions
- Enhanced Virus Protection
- JTAG interface for debug support

A high-bandwidth, low-latency integrated DDR memory controller

- Support for 64-bit DDR2 SDRAM memory – PC2-6400 (DDR2-800), PC2-5300 (DDR2-667), PC2-4200 (DDR2-533), or PC2-3200 (DDR2-400) SDRAM, unbuffered DIMMs
- Up to 10.6GB/s memory bandwidth
- ECC checking with double-bit detect and single-bit correct

HyperTransport™ technology for high-speed I/O communication

- Up to 8GB/s HyperTransport™ I/O bandwidth
- Up to 20.8GB/s total delivered processor-to-system bandwidth (HyperTransport bus + memory bus)

Large high-performance on-chip cache

- 64KB Level 1 instruction cache per core
- 64KB Level 1 data cache per core
- 512KB Level 2 cache with single-core processors
- Up to 1MB Level 2 cache per core with dual-core processors

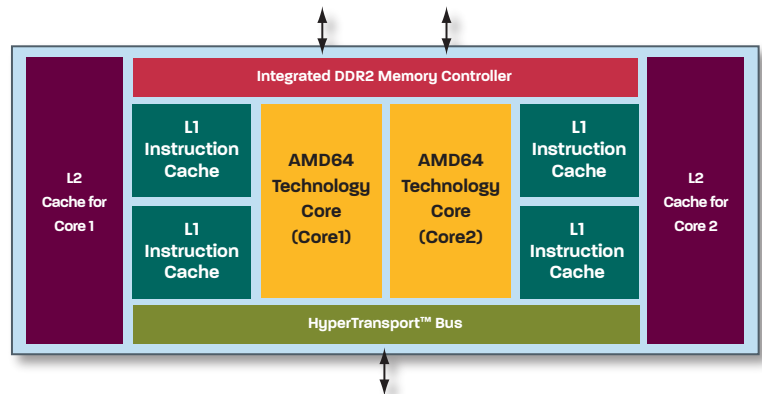
Socket AM2 Packaging

- Lidded micro pin grid array (PGA)
- 31x31 grid array
- 1.27-mm pin pitch
- Compliant with RoHS (EU Directive 2002/95/EC)

Beyond outstanding processors: longevity, exceptional design support, quick time to market

The AMD64 Longevity Program ensures that the high-performance processors you select for an embedded design will be available for a longer than standard time frame. AMD understands the unique requirements of the embedded market and our AMD64 Longevity Program is in place to maximize the available choice of industry-leading x86 processors – delivering a wide range of performance, power, thermal, and packaging features.

AMD has a strong design support program in place. From RDKs to extensive and readily available documentation to a suite of leading debug tools, our goal is to make your design cycle quick and efficient, and to help you get your embedded products on the market quickly. Add this to the improved time to market achieved with utilizing commercial off-the-shelf products like the industry standard x86 AMD Athlon 64 and AMD Athlon 64 X2 Dual-Core processors.



www.amd.com/amd64embedded

About AMD

AMD (NYSE:AMD) designs and produces innovative microprocessors and low-power processor solutions for the computer, communications, and consumer electronics industries. AMD is dedicated to delivering standards-based, customer-focused solutions for technology users, ranging from enterprises and governments to individual consumers.

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Smarter Choice